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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,177	07/17/2006	Holger Timinger	DE040018US1	2751

24737 7590 07/08/2010
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
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EXAMINER	
BRUTUS, JOEL F	

ART UNIT	PAPER NUMBER
3768	

MAIL DATE	DELIVERY MODE
07/08/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,177	TIMINGER ET AL.	
	Examiner	Art Unit	
	JOEL F. BRUTUS	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al (US Pat: 6,468,265) in view of Viswanathan et al (Pub. No.: US 2005/0020911) or Gilboa et al (US Pat: 6,711,429).

Regarding claim 1, Evans et al teach a motion tracking system to tract movement information of a moving worksite on a heart [see column 7 lines 35-38]. Evans et al teach the surgical instrument may be endoscopic cameras [see column 7 lines 53-54]. Evans et al teach motion tracking means for gathering movement information on a moving anatomical part of a patient's body and a surgical instrument [see column 7 lines 14-15].

Evans et al teach a position/orientation device 120 may comprise an electromagnetic sensing device which detects the position and orientation of the targets 121, which may be in the form of, for example, active transmitters, or receivers [see column 22 lines 18-25]. These targets can be attached to the instrument for location detection (emphasis added).

Evans et al teach in FIG. 5 ECG system can be used to augment the motion tracking system of the present invention. ECG trace 502 is the standard output of an ECG system. The ECG trace can be compared over time to the measured displacement of the worksite. Trace 501 illustrates a typical displacement cycle in one dimension for a portion of the cardiac surface [see column 27 lines 30-40].

Evans et al teach correlation between the ECG trace 502 and the displacement motion trace 501 can be derived by the computer control system (used as the data processing device) [see column 27 lines 33-40] and further disclose the correlation can be used to predict cardiac worksite motion and the computer control system could predict the displacement indicated by dashed line 505 [see column 27 lines 45-48].

Evans et al may not specifically mention calculating an estimated movement compensated location of the instrument.

However, Evans et al teach the computer can predict and derived displacement and worksite motion which is constant with the instrument motion [see above]. The computer is designed to determine estimated movement compensated location [see column 27 lines 30-54].

Nevertheless, Viswanathan et al teach their navigation system provides means to determine a predicted location and orientation of an instrument [see 0019-0022], disclose their system can compute updated orientation and location of catheter tip [see 0032].

Viswanathan et al teach an automated method of aligning the catheter tip with tip-to-target vector [see 0025, 0037]; locating device with anatomical cycle such as cardiac cycle and ECG data [see 0036].

As disclosed here, their system has the capability of determining a new estimated location of the catheter tip due to anatomical motion which means they are compensating for heart movement (emphasis added).

Gilboa et al teach data is collected by placing the catheter tip at the desired location, measuring the location of the tip during at least one cardiac cycle while synchronizing the data to the cardiac electrophysiology signal, and matching the data to a previously-defined characterization model of movement of the tissue, all for obtaining a normal vector to the local plane of the surface of the inner wall of the heart [see column 28 lines 20-28]. Gilboa et al teach it is also possible to compensate for such movements [see column 34 lines 65-67].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to combine Evans et al with Viswanathan et al or Gilboa et al by calculating an estimated movement compensated location of the instrument; in order to precisely and accurately accessing the desired target.

Regarding claims 2 and 10, all other limitations are taught as set forth by the above teaching.

Evans et al don't specifically mention reconstructing a movement model from measured values of the locations of the worksite.

However, Evans et al teach reconstruct 3D motion of the heart [see column 79 lines 1-5]. This teaching proves that Evans et al system has the capability of reconstructing movement model from measured values of the location of volume nodes (emphasis added).

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to reconstruct movement model from measured values; in order to accurately and precisely determine the best path for navigating the instrument.

Regarding claim 3, all other limitations are taught as set forth by the above teaching.

Evans et al don't teach supplement measured movement of the target in the movement model by interpolation.

However, Evans et al teach reconstructing data [see column 79 lines 1-5].

Nevertheless, Viswanathan et al teach measured catheter locations are interpolated [see 0034].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to combine Evans et al with Viswanathan et al; in order to construct new data points.

Regarding claim 4, all other limitations are taught as set forth by the above teaching.

Evans et al teach the system is capable of displaying three dimensional images [see column 13 lines 64-66] and further disclose MRI [see column 78 lines 60-63] and X-ray [see column 75 lines 28-32].

Regarding claim 5, all other limitations are taught as set forth by the above teaching.

Evans et al teach a relative position of the moving surgical instrument with respect to the resultant surgical cardiac worksite is generally constant [see abstract]. Therefore, location values of a body volume would correspond with measured values of the instrument (emphasis added).

Regarding claim 7, all other limitations are taught as set forth by the above teaching.

Evans et al teach a computer to provide still image of the moving of the site and displaying on the video display system an image of the heart in which the surgical worksite is made to be generally stationary or still [see column 7 lines 53-54]. The computer is designed to determine estimated movement compensated location [see column 27 lines 30-54].

Regarding claim 8, all other limitations are taught as set forth by the above teaching.

Evans et al teach an ECG 90 apparatus coupled to the computer [see column 21 lines 50-55].

Regarding claims 6 and 9, all other limitations are taught as set forth by the above teaching.

Evans et al teach a position/orientation device 120 may comprise an electromagnetic sensing device which detects the position and orientation of the targets 121, which may be in the form of, for example, active transmitters, or receivers [see column 22 lines 18-25]. These targets can be attached to the instrument for location detection (emphasis added). Through the position device a measured locations of the instrument can be done without moving relative to the volume (emphasis added).

Response to Arguments

3. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL F. BRUTUS whose telephone number is (571)270-3847. The examiner can normally be reached on Mon-Fri 7:30 AM to 5:00 PM (Off alternative Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. F. B./
Examiner, Art Unit 3768

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768